Space Weather Forecast

Issued on Monday, 29 January 2024 at 01:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Geomagnetic Storms either late on 29 or 30 January from onset of fast solar winds. Chance of isolated Moderate flares.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Low with only Common-class flares observed, although the strongest flare was from a region just beyond the northeast limb. There are four sunspot regions on the visible side of the Sun, with the two regions in the west appearing to weaken. Two further regions are very small and benign. No Earth-directed CMEs (coronal mass ejections) have been observed on available imagery.

Solar Wind / Geomagnetic Activity: Solar winds increased from background to slightly elevated levels around halfway through the period. Total magnetic field strength has varied between moderate and weak levels, due to slight enhancements in the solar wind. The north-south component was mainly weakly positive during the first half of the period, but switched to the negative orientation during the second half of the day. Geomagnetic activity started Quiet, but increased to Unsettled by the end of the period.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary
Solar Activity: Low activity is forecast, with an isolated Moderate-class flare risk. This is initially from the two complex regions in the west, but is increasingly likely to be due to the regions rotating onto the eastern limb.

Solar Wind / Geomagnetic Activity: No CMEs are forecast to affect the Earth, although a glancing blow from a weak CME is currently believed to be perturbing the near-Earth environment. A fast solar wind is then forecast to affect the Earth from either late on 29 or during 30 January. The effects of this are likely to gradually wane towards the end of the period. Geomagnetic activity is forecast to start mainly Quiet to Unsettled, with isolated Active intervals. There is then a risk of G1/Minor Storm intervals either late on 29 or during 30 January due to the onset of the fast solar wind.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring. There is a very slight chance of this flux rising above background if any notable flares occur from any of the sunspots near the west limb.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	30	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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